

You Can Fly an R/C Airplane!

For most people, the beauty of an airplane's design lies in its lines and curves. For the flier, however, the beauty of a design is in what that design can do. That feeling is as true for R/C (radio control) pilots as it is for pilots of full-size aircraft. Their differences - aircraft size and the fact that R/C pilots remain on the ground - have very little impact on the way given designs perform. As a result, R/C modelers have been able to shrink and fly aircraft that range from the Wright Brothers' first plane to the magnificent Space Shuttle.

How do I get started?

Knowing what you're getting into helps. Reading the rest of this article will be a good start but then visit one of the many R/C clubs in and around Tucson. If, after some observation of everyday flying, you believe you would like to learn to fly R/C aircraft, your next step would be to find an instructor. With an instructor, you'll learn faster, and with less frustration, than you can on your own. If the instructor has a radio with a buddy box (trainer system) feature, you'll be able to buy a compatible radio and learn to fly with less risk to your plane. There are a number of different ways to find an instructor. The easiest is just to ask one of the modelers at any of the R/C field you visit. The Tucson Radio Control Club (TRCC) has several qualified instructors that can assist you in the selection of your first aircraft, radio, and engine. (See map for TRCC field location.)

Frequently asked beginner questions

How much does it cost? A lot depends on your budget. You can spend as little as \$100.00 or as much as \$1000.00 on assembling the basics. Average cost for a complete (but no frills) beginner's package, however, still runs around \$250- \$400.

How fast does a model go? Trainers usually cruise at 25-30 mph and can land at as slow as 12-15 mph. However, there are also unmodified, off-the-shelf airplanes that can deliver speeds of up to 200 mph!

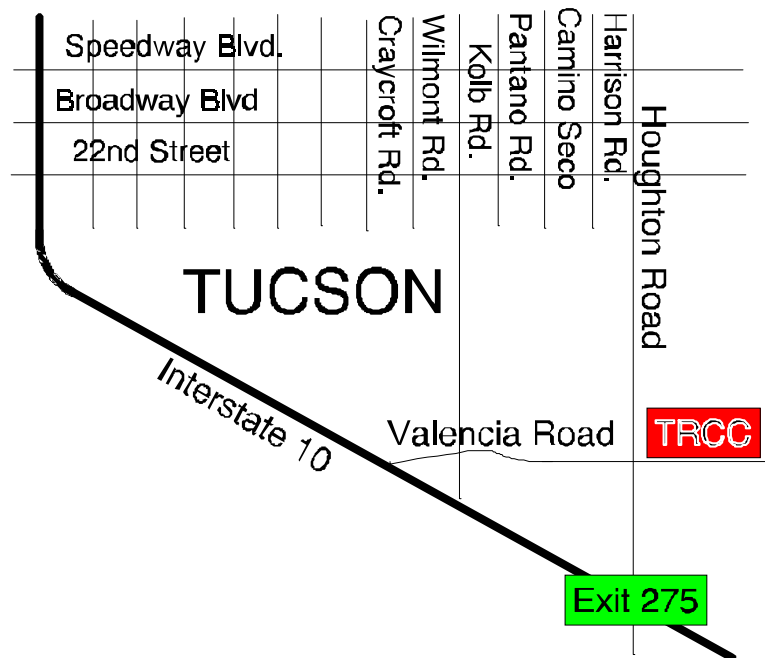
How far can a model fly? The range for a modern R/C system is about a mile, to maintain control; you need to have your aircraft close enough to tell what it's doing. Even a plane with a 5-6 foot wingspan looks tiny at half a mile.

What happens if I run out of fuel in flight? Contrary to popular belief, you have control even if your engine stops running. You just glide your plane in for a "dead stick" landing. The radio system has its own batteries for power. Choosing your first plane is usually up to you and your instructor. Of course he will suggest one or more trainers he is familiar with and you should take his advice. Remember he has been there and knows what has worked for him and other pilots he has taught to fly. After practicing the basics of flying and gaining some confidence "behind the sticks," you will want to explore the many other exciting styles of R/C aircraft.

Flying Basics

Aerodynamics: To fly, an airplane's wing has to overcome gravity by developing lift greater than the weight of the plane. Since it can't do that standing still, airplanes use thrust...force directed backwards...to drive the wing forward through the air and generate lift. However, thrust has its own opposition to overcome in the form of drag - the resistance of the air to a body moving through it. If lift and thrust are greater than gravity and drag, the potential for flight...and fun...is there.

Wing Location: Wing placement, for the most part, falls into two major categories: high wing design and low wing design. In a high wing design, the weight of the model is suspended below the wing. When the model tilts, the model's weight tends to try to return the model to a level position. As a result, high-wing models tend to be more stable, easier to fly, and natural choices as trainers. A low-wing model is generally the opposite: with its weight



above the wing, it tends to be less stable - excellent for advanced fliers who want to perform rolls, loops and other aerobatic maneuvers.

Airfoil: If you face the wing tip of the plane and cut it from front to back, the cross section exposed would be the wing's airfoil. There are three major categories of airfoil. The Flat-Bottom Airfoil will develop the most lift at low speeds. This is ideal for trainers and first-time pilots. A Symmetrical Airfoil's top and bottom have the same shape allowing it to produce lift equally when right-side up or upside down and transition between the two smoothly. Lastly, is a Semi-symmetrical Airfoil, which is a combination of the other two and favored by intermediate and sport pilots.

Wing Area/Wing Loading: Wing area is the amount of wing surface available to create lift. Wing Loading is the weight that a given area of the wing has to lift and is usually measured in ounces per square foot. Generally, a light wing loading is best for beginners; the plane will perform better and be easier to control.

Dihedral: Dihedral is the upward angle of the wings from the fuselage. Dihedral increases stability and decreases aerobatic ability.

Wing Thickness: Wing thickness - measured from top to bottom - determines how much drag is created. A thick wing creates more drag, causing slower speeds and gentler stalls. A thin wing permits higher speeds and sudden stalls - desirable for certain aerobatic maneuvers.

Landing Gear Location: Tricycle gear includes a nose gear and two main gears making take-offs and landings easier - ideal for beginners.

General Categories of Airplanes Available

- Trainers: First steps in a flying future. Designed for easy building and flying, trainers give first-time pilots what they lack most: confidence. Construction is typically simple and straightforward. Common design features include flat-bottom airfoils, generous dihedral, wide-stance trike gear and high-wing positioning result in gentle, slow-flying craft that offer generous amounts of reaction time and "elbow room" to learn from mistakes.
- Bipes: A refreshing change of pace. The lure of a bipe is something that most sport fliers experience at least once in their lives. And building an extra wing is a small price to pay for the pleasure of flying a small piece of aviation history. Some are very easy to fly while others are not. Not recommended for training.
- Warbirds: Gunfighters of the flying field. They were called by names such as "Black Widow," "Whispering Death" and "Butcher Bird" and each fought valiantly in the battle for air supremacy. Most warbird aircraft are demanding of your full and undivided attention at all times. Again not recommended for training.
- Sport: Built with a flair for performance. Building is generally not challenging - but looks and performance options range from semi-agile "Sunday Fliers" to screamin' demons for competition.
- Scale: Recalling the past in detail. Scale modeling can be as simple as building a "stand-off scale" fighter, or as time-intensive and absorbing as crafting a true, precision scale classic.
- Jets: Life in the fast lane in flight! Definitely not for the first-time pilot, a jet is sure to be a never-to-be-forgotten experience for the seasoned thrill seeker.

More Stuff to Remember! There are several abbreviations you will need to be familiar with before making your buying decision. Many airplanes, called kits, are simply a box of balsa pieces with assembly instructions. Others are available in various stages of completion: ARF stands for almost-ready-to-fly and has main assemblies complete and covered; RTF means ready-to-fly; and RTC is ready-to-cover - the building is all done and you customize it with your own trim scheme.

The Tucson Radio Control Club.

TRCC is the oldest R/C flying club in town and membership averages 175. Club meetings are held on the third Thursday of the month at 7:30PM Disabled American Veterans Chapter 2, (DAV), 3455 South Wilmot Road. Please, if you are interested in radio control airplanes or just enjoy watching them fly, come visit us at our field. Oh and remember when at the field we are having fun and may not notice you so please introduce yourself. We love to talk about our hobby and our club but we are not mind readers. Hope to see you at our field and enjoy the sights and sounds of radio control model flying - we sure do!